

REMARKS

These Remarks are responsive to the Office Action mailed October 19, 2004 ("Office Action"). Applicants respectfully request reconsideration of the rejections of claims 1-28 for at least the following reasons.

STATUS OF THE CLAIMS

Claims claim 1-28 are pending in the application. Claims 1, 3-5, 8, 11-18, 20-21, 23-26, and 28 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent 5,056,021 issued to Carolyn Ausborn (Ausborn). Claims 2, 6, 7, 9, 19, 22, and 27 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Ausborn in view of U.S. Patent 6,332,143 issued to Wayne O. Chase (Chase). Applicants respectfully submit the applied references fail to render the claimed invention anticipated or obvious for the reasons set forth below. Accordingly, applicants respectfully request reconsideration and further examination of this application.

RESPONSE TO ANTICIPATION REJECTION

Claims 1, 3-5, 8, 11-18, 20-21, 23-26, and stand rejected as being anticipated by Ausborn. Ausborn does not teach each limitation of the any one of these claims. Accordingly, Ausborn does not anticipate these claims.

The claimed invention is directed to representing concepts in a vocabulary that is easily stored and read by computers. The applied art on the other hand is directed to computer methods of analyzing natural language to extract meanings. These are different problems that require differing approaches and result in different solutions. Not surprisingly, the applied art directed to analyzing natural language does not include the steps and elements of the present claims directed to systems and methods for using a vocabulary developed particularly for machine readability.

The claimed invention is directed to representing concepts in a form that is easily stored and interpreted by a computer. In the preferred embodiment, each concept is represented by a word 64 bits long. Each word is formed from five roots that represent a characteristic of the word. The format of words according the invention is standard allowing computers to extract the meaning of the word. However, representing concepts through the use of multiple characteristics also provides for the subtlety and flexibility of language. A concept is represented by a base root, an alternate root, a source root, a destination root, and a mode root. Thus, according to the invention finely distinguished concepts can be represented in a defined manner that can be easily

interpreted by computers. In other words, a vocabulary of machine readable words can be formed by the instant invention.

Ausborn is not directed to representing concepts in form that may be easily processed by a computer. Rather, Ausborn is directed to a computer method for analyzing natural language to divine the meaning of a conventional phrase or sequence of words. The Ausborn system attempts to overcome the ambiguities inherent in human language by making a determination of commonality based on the different words and different meaning of words used in a phrase. In other words, Ausborn uses a machine to analyze natural language in an attempt to interpret a phrase of conventional human vocabulary.

In applicants' claims, concepts are represented in words that have a standard format in accordance with the principles of the invention. Ausborn does not teach representing concepts in a standard format. This is because Ausborn is directed to analyzing phrases that are represented by natural language. For this reason, Ausborn does not teach each limitation of applicants' claims.

Specifically, claim 1 sets forth representing data by representing roots based on a tree structure and representing a word by grouping a plurality of roots. The word is stored to represent the data concept. Ausborn does not teach representing data. Ausborn, to the contrary, is directed to analyzing natural language representations of concepts. Ausborn, thus, teaches neither step of representing set forth by claim 1. Ausborn does analyze natural language words using a tree-type classification structure like the structure used to represent the roots of the present invention. However, Ausborn does not use the structure to represent concepts, but rather uses the tree-type structure to identify commonalities among natural language words in a phrase to be analyzed.

Ausborn does not teach the step of "representing a data concept by grouping a plurality of roots from a set of roots to form a word, each root of the plurality of roots corresponding to a characteristic of the data concept represented by the word" as set forth by claim 1. As discussed above, Ausborn is not directed to representing a data concept, but rather to a computer method of analyzing a concept set forth in natural language. Ausborn, thus, includes no teaching regarding grouping a plurality of roots. Ausborn does not teach each root of a plurality of roots corresponding to a characteristic of the word.

The Office Action cites to Figure 6, and columns 11-15 of Ausborn to show the step of representing a data concept by grouping a plurality of roots. The Office Action provides no explanation how the cited figure and passage of the specification teaches a plurality of roots corresponding to characteristics of a data concept. The Office Action cites to no teaching of Ausborn in which a data concept is represented. The Office Action identifies in Ausborn no roots corresponding to characteristics of a data concept. The Office Action cites to no teaching of Ausborn of a grouping of a plurality of roots. Figure 6 and columns 11-15 of Ausborn are directed to a rule for examining the more specific meanings of the words of a phrase. Nothing in figure 6 or columns 11-15 of Ausborn is directed to roots of a word that correspond to characteristics of the word. This is not surprising as Ausborn is not concerned with selecting multiple roots to define a concept, but rather is directed to analyzing natural language phases to determine a meaning.

Ausborn does not teach a method of representing data concepts as set forth by claim 1. Applicants respectfully request that the rejection of claim 1 as being anticipated by Ausborn be withdrawn for this reason.

Claims 8, 14, 18, 21, and 24 are the remaining independent claims. Although the Office Action refers to these claims when addressing the steps of claim 1, the Office Action does not address the specific limitations of the remaining independent claims. Accordingly, the Office Action has not established a *prima facie* case of anticipation against claims 8, 14, 18, 21, and 24.

Claim 8 sets forth a method of representing all concepts. Ausborn is not directed to representing concepts. Claim 8 includes a step of “representing each particular concept with a plurality of roots, each root of each plurality of roots representing a characteristic of a particular concept.” Ausborn does not teach this step for the reasons set forth above with respect to claim 1. Claim 8 further sets forth “representing each root with a plurality of fields.” Ausborn includes no teaching of roots represented with a plurality of fields. In particular, claim 8 sets forth that “a most significant field of each plurality of fields represents a subset of the plurality of subsets of the top level of the definitional tree, and a least significant field of each plurality of fields represents a subset of ideas at a lowest level of the definitional tree-type structure.” Ausborn does not teach fields of varying significance used to represent roots.

Claim 14 sets forth a structure, stored on a readable medium. Ausborn teaches no data structure, because in Ausborn, data is represented by conventional natural language. Claim 14

sets forth a plurality of fields. Ausborn teaches no fields. Claim 14 sets forth roots including a fixed number of fields. Each root includes a most significant field that designates a general abstract concept and a field of lesser significance that designates a narrower concept with the general abstract concept. Ausborn teaches no roots including such fields. Claim 14 sets forth “a word including the plurality of roots, each concept designated by each root of the plurality of roots designating a different characteristic of the word.” As discussed above, Ausborn teaches no roots that designate a characteristic of a word.

Claim 18 sets forth a computer apparatus for determining meaning from a machine vocabulary. The apparatus of claim 18 includes a processor including a register for receiving bits of data. The processor is programmed to process words received in the register. Ausborn teaches no such register. Ausborn is not compatible with receiving words in a register as set forth by claim 18. This is because the form of the words is defined in claim 18 for machine processing. Ausborn, on the other hand, analyzes natural language, which is not input in a well-defined form. Claim 18 sets forth the form of the words received in the register as including a plurality of roots where each root includes a plurality of fields. Ausborn does not teach such words for reasons discussed above. In claim 18, the meaning of word is determined by the value of the bits received in the register. This is completely contrary to the teaching of Ausborn. Ausborn instead relies on a complex analysis to determine meaning from natural language inputs.

Claim 21 sets forth a computer apparatus for determining meaning from a machine vocabulary. Claim 21 sets forth means for processing words by determining a value of each of a plurality of fields which in turn represent a plurality of roots which in turn represent characteristics of the concept of the word. Ausborn does not represent concepts in this manner for the reasons discussed above.

Claim 24 sets forth a method of storing data. Ausborn is not directed to storing of data, but rather is directed to analyzing natural language to extract meaning. Claim 24 sets forth a step of “combining a plurality of word roots to form a word, each word root representing a characteristic of the word.” Ausborn does not teach roots representing word characteristics for the reasons discussed above.

Claims 3-5 depend from claim 1. Claims 11-13 depend from claim 8. Claims 15-17 depend from claim 14. Claim 20 depends from claim 18. Claim 23 depends from claim 21.

Claims 25, 26, and 28 depend from claim 24. As Ausborn does not anticipate any of the independent claims, Ausborn cannot anticipate these dependent claims. Although the Office Action refers to each of these dependent claims, the Office Actions address only the language of claim 3. Accordingly, the Office Action fails to establish a *prima facie* case of obviousness against claims 4, 5, 11-13, 15-17, 20, 23, 25, 26, and 28. For example, Claim 4 sets forth that certain roots are conventionalized. Ausborn teaches no roots and thus does not teach conventionalizing roots. Claim 12 refers to designating negative meaning. Ausborn teaches no designation of negative meaning. Claims 13, 17, 23, and 28 set forth an additional root providing a connotation of how word of the represented concept is used. Ausborn includes no representation of connotation.

Ausborn is not directed to representing concepts with a machine readable vocabulary. To the contrary, Ausborn is directed to analyzing conventional natural language to extract meanings. Accordingly, Ausborn does not teach the limitations of the pending claims directed to methods and systems for representing concepts with a machine readable vocabulary. Accordingly, applicants respectfully request that the rejection of claims 1, 3-5, 8, 11-18, 20-21, 23-26, and 28 as being anticipated by Ausborn be withdrawn.

RESPONSE TO OBVIOUSNESS REJECTIONS

Claims 2, 6, 7, 9, 19, 22, and 27 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Ausborn in view of Chase. Claims 2, 6 and 7 depend from claim 1. Claim 9 depends from claim 8. Claim 19 depends from claim 18. Claim 22 depends from claim 21. Claim 27 depends from claim 24. Ausborn fails to show or suggest each limitation of the independent claims from which these claims depend because Ausborn is directed to analyzing natural language to derive meaning. Chase is directed to natural language to determine connotative content. Chase, like Ausborn, includes no suggestion of representing a concept in a word of a defined form for convenient machine reading and storage. Chase does not include a suggestion to modify Ausborn to correct for the deficiencies discussed above with respect to the independent claims. For at least this reason, Ausborn in view of Chase does not show or suggest each limitation of these dependent claims.

The Office Action merely asserts that one having skill in the art would have found it obvious to incorporate into the database of Ausborn a connotative field from Chase. However, neither Ausborn nor Chase is directed to representing concepts with a vocabulary of machine

readable words. Accordingly, neither applied reference teaches using a field in a machine readable word to designate a connotation. Furthermore, the limitations added by dependant claims 2, 6, 9, 19, 22, and 27 are not directed to fields representing a connotation. Claims 2, 9, 19 and 22 are directed the bits of the machine readable word matching the register of the processor designed to read the vocabulary. Neither Ausborn nor Chase includes a showing or suggestion regarding a word having the same number of bits as a processor register. Claims 6 and 27 are directed to negation bits that designate that a root has a negative meaning. Chase includes no showing or suggestion of a negation bit. As the Office Action fails to address the limitations of the rejected claims, a *prima facie* case of obviousness has not been established.

Applicants respectfully request that the rejections of claims 2, 6, 7, 9, 19, 22, and 27 as being unpatentable over Ausborn in view of Chase be withdrawn for at least the above reasons.

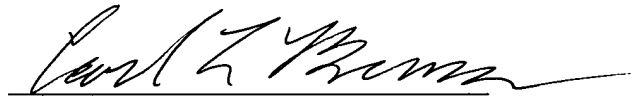
CONCLUSION

The Office Action, references and rejections have been duly considered by the applicants and addressed by the foregoing amendments and remarks. Reconsideration of the application and early allowance are respectfully solicited. Should the Examiner require resolution of any issues for allowance, the Examiner is invited to contact the undersigned to expedite the same. In the event any variance exists between the amount authorized to be charge to the Deposit Account and the Patent Office charges, please charge or credit any difference to the undersigned's Deposit Account No. 50-0206.

Respectfully submitted,

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